

CLAIMS

What is claimed is:

1. A method of determining a specific constituent in  
5 a liquid stream, comprising:

selecting a sample for testing;

10 programming the controlled movement of the sample  
through selected configurations of analytical  
manifolds;

controlling via computer control the sample flow;  
and

15 automatically measuring a reaction product to  
complete a flow injection analysis.

2. The method as recited in claim 1, wherein  
20 controlling the sample flow comprises utilizing computer  
control over the pumping of one or more reagents through  
each analytical manifold.

3. The method as recited in claim 2, wherein  
controlling comprises automatically pumping the sample and  
the reagents into a fluidic interface buss.

5 4. The method as recited in claim 3, wherein  
controlling comprises automatically mixing the sample with  
the one or more reagents on each analytical manifold.

10 5. The method as recited in claim 4, wherein  
controlling comprises automatically rinsing the analytic  
manifolds with an appropriate wash solution.

15 6. The method as recited in claim 1, wherein  
controlling comprises automatically adjusting a rotary valve  
to select a desired analytical manifold to receive the  
sample.

20 7. The method as recited in claim 1, wherein  
controlling comprises sequentially analyzing the sample in  
two or more analytical manifolds.

8. The method as recited in claim 1, wherein  
controlling comprises analyzing the sample in parallel on  
separate analytical manifolds.

9. An automated ion analyzer, comprising:

a flow injection analyzer having a plurality of  
5 analytical manifolds; and

an automated control system coupled to the flow  
injection analyzer, the automated control  
system being configured to control an  
10 analysis of a sample on one or more of the  
analytical manifolds selected by an operator.

10. The automated ion analyzer as recited in claim 9,  
wherein the flow injection analyzer comprises a plurality of  
15 computer controlled valves to selectively release carrier  
fluid and reagent.

11. The automated ion analyzer as recited in claim 10,  
wherein the flow injection analyzer comprises a plurality of  
20 computer controlled pumps.

12. The automated ion analyzer as recited in claim 11,  
wherein at least one pump comprises a reagent pump.

13. The automated ion analyzer as recited in claim 11,  
wherein at least one pump comprises a carrier pump.

14. The automated ion analyzer as recited in claim 11,  
5 wherein at least one pump comprises a sample pump.

15. The automated ion analyzer as recited in claim 11,  
wherein the flow injection analyzer comprises a computer  
controlled rotary valve to automatically control the  
10 injection of a sample onto a selected analytical manifold.

16. The automated ion analyzer as recited in claim 11,  
wherein the automated control system comprises a computer  
control system.

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17. An analytical system for determining the presence  
of specific constituents in a liquid stream, comprising:

a sample routing system;

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a reagent mixing system to selectively mix a  
plurality of reagents with a sample;

a reaction product detector; and

a control system to automatically control routing  
of the sample through the sample routing  
system, mixing of the plurality of reagents  
5 with the sample and routing of the reaction  
product to the reaction product detector.

18. The analytical system as recited in claim 17,  
wherein the control system comprises a computer control  
10 coupled to a plurality of pumps and a plurality of valves to  
selectively control flow of a sample and the plurality of  
reagents.

19. The analytical system as recited in claim 18,  
15 wherein the reagent mixing system comprises a plurality of  
analytical manifolds independently coupled to a unique  
reagent supply, the plurality of analytical manifolds being  
individually computer controlled.

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